CCSS: Mathematics: Operations & Algebraic Thinking (CCSS: Grade 4)

4.OA.B. Gain familiarity with factors and multiples.

4.OA.B.4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Factors and Multiples

CCSS: Mathematics: Measurement & Data (CCSS: Grade 4)

4.MD.A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

4.MD.A.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

CCSS: Mathematics: Measurement & Data (CCSS: Grade 4)

4.MD.C. Geometric measurement: understand concepts of angle and measure angles.

4.MD.C.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

4.MD.C.5a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

4.MD.C.5b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

4.MD.C.6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

4.MD.C.7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

CCSS: Mathematics: Geometry (CCSS: Grade 4)

4.G.A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

4.G.A.2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

CCSS: Mathematics: Operations & Algebraic Thinking (CCSS: Grade 5)

5.OA.A. Write and interpret numerical expressions.

5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Algebraic Reasoning

5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Algebraic Reasoning

CCSS: Mathematics: Number & Operations in Base Ten (CCSS: Grade 5)

5.NBT.A. Understand the place value system.

5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Number Systems

5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Number Systems

5.NBT.A.3. Read, write, and compare decimals to thousandths.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation

5.NBT.A.3a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Number Systems

5.NBT.A.3b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation

5.NBT.A.4. Use place value understanding to round decimals to any place.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Number Systems

CCSS: Mathematics: Number & Operations in Base Ten (CCSS: Grade 5)
5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.

5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

CCSS: Mathematics: Number & Operations—Fractions (CCSS: Grade 5)
5.NF.A. Use equivalent fractions as a strategy to add and subtract fractions.
5.NF.A.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

CCSS: Mathematics: Number & Operations—Fractions (CCSS: Grade 5)
5.NF.B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
5.NF.B.3. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.4a. Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b.

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Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.4b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

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Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.5. Interpret multiplication as scaling (resizing), by:
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

CCSS: Mathematics: Number & Operations—Fractions (CCSS: Grade 5)
5.NF.B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
5.NF.B.5a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.5b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n × a)/(n × b) to the effect of multiplying a/b by 1.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.7a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.7b. Interpret division of a whole number by a unit fraction, and compute such quotients.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

5.NF.B.7c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations

CCSS: Mathematics: Measurement & Data (CCSS: Grade 5)
5.MD.A. Convert like measurement units within a given measurement system.
5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning

CCSS: Mathematics: Measurement & Data (CCSS: Grade 5)
5.MD.B. Represent and interpret data.
5.MD.B.2. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Statistics and Probability

CCSS: Mathematics: Measurement & Data (CCSS: Grade 5)
5.MD.C. Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
5.MD.C.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

5.MD.C.3a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

5.MD.C.3b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement

5.MD.C.4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
5.MD.C.5a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
5.MD.C.5b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
5.MD.C.5c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
CCSS: Mathematics: Geometry (CCSS: Grade 5)
5.G.A. Graph points on the coordinate plane to solve real-world and mathematical problems.
5.G.A.1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
5.G.A.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
CCSS: Mathematics: Geometry (CCSS: Grade 5)
5.G.B. Classify two-dimensional figures into categories based on their properties.
5.G.B.3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
5.G.B.4. Classify two-dimensional figures in a hierarchy based on properties.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
CCSS: Mathematics: Ratios & Proportional Relationships (CCSS: Grade 6)
6.RP.A. Understand ratio concepts and use ratio reasoning to solve problems.
6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
6.RP.A.2. Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
6.RP.A.3a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
6.RP.A.3b. Solve unit rate problems including those involving unit pricing and constant speed.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
6.RP.A.3c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
6.RP.A.3d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Proportional Reasoning
CCSS: Mathematics: The Number System (CCSS: Grade 6)
6.NS.A. Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**

Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Rational Number Operations
CCSS: Mathematics: The Number System (CCSS: Grade 6)
6. NS.B. Compute fluently with multi-digit numbers and find common factors and multiples.
6. NS.B.2. Fluently divide multi-digit numbers using the standard algorithm.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
6. NS.B.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
6. NS.B.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Factors and Multiples
CCSS: Mathematics: The Number System (CCSS: Grade 6)
6.NS.C. Apply and extend previous understandings of numbers to the system of rational numbers.
6.NS.C.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Integers
6.NS.C.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
CCSS: Mathematics: The Number System (CCSS: Grade 6)
6.NS.C. Apply and extend previous understandings of numbers to the system of rational numbers.
6.NS.C.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Integers
6.NS.C.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
6.NS.C.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
6.NS.C.7. Understand ordering and absolute value of rational numbers.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
6.NS.C.7a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Integers
6.NS.C.7b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Integers
6.NS.C.7c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Integers
6.NS.C.7d. Distinguish comparisons of absolute value from statements about order.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Integers
6.NS.C.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Geometry and Measurement
CCSS: Mathematics: Expressions & Equations (CCSS: Grade 6)
6.EE.A. Apply and extend previous understandings of arithmetic to algebraic expressions.
6.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents.
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**
Computation
Colby, Calvin / **Math 5** / **Grade 5 (Middle School)**

Algebraic Reasoning

6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers.

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Algebraic Reasoning

6.EE.A.2a. Write expressions that record operations with numbers and with letters standing for numbers.

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Algebraic Reasoning

6.EE.A.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.

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Algebraic Reasoning

6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

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Algebraic Reasoning

CCSS: Mathematics: Expressions & Equations (CCSS: Grade 6)

6.EE.B. Reason about and solve one-variable equations and inequalities.

6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

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Algebraic Reasoning

6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

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Algebraic Reasoning

6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

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Algebraic Reasoning

CCSS: Mathematics: Geometry (CCSS: Grade 6)

6.G.A. Solve real-world and mathematical problems involving area, surface area, and volume.

6.G.A.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

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[Geometry and Measurement](#)

CCSS: Mathematics: Statistics & Probability (CCSS: Grade 6)

6.SP.A. Develop understanding of statistical variability.

6.SP.A.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

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6.SP.A.2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

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6.SP.A.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

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[Statistics and Probability](#)

CCSS: Mathematics: Statistics & Probability (CCSS: Grade 6)

6.SP.B. Summarize and describe distributions.

6.SP.B.5. Summarize numerical data sets in relation to their context, such as by:

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6.SP.B.5a. Reporting the number of observations.

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6.SP.B.5c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

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6.SP.B.5d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

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CCSS: Mathematics: Ratios & Proportional Relationships (CCSS: Grade 7)

7.RP.A. Analyze proportional relationships and use them to solve real-world and mathematical problems.

7.RP.A.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

Colby, Calvin / Math 5 / Grade 5 (Middle School)
Proportional Reasoning
7.RP.A.2. Recognize and represent proportional relationships between quantities.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Proportional Reasoning
7.RP.A.2c. Represent proportional relationships by equations.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Proportional Reasoning
7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Proportional Reasoning
CCSS: Mathematics: The Number System (CCSS: Grade 7)
7.NS.A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
7.NS.A.1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Computation
7.NS.A.1a. Describe situations in which opposite quantities combine to make 0.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.1b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.1c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Computation
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.1d. Apply properties of operations as strategies to add and subtract rational numbers.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Computation
CCSS: Mathematics: The Number System (CCSS: Grade 7)
7.NS.A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
7.NS.A.1d. Apply properties of operations as strategies to add and subtract rational numbers.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Computation
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.2a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.2b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.2c. Apply properties of operations as strategies to multiply and divide rational numbers.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Computation
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
7.NS.A.3. Solve real-world and mathematical problems involving the four operations with rational numbers.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Integers
CCSS: Mathematics: Expressions & Equations (CCSS: Grade 7)
7.EE.B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
7.EE.B.4a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
Colby, Calvin / Math 5 / Grade 5 (Middle School)
Algebraic Reasoning
CCSS: Mathematics: Geometry (CCSS: Grade 7)
7.G.B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
7.G.B.4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

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[Geometry and Measurement](#)

7.G.B.5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

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[Geometry and Measurement](#)

CCSS: Mathematics: Statistics & Probability (CCSS: Grade 7)

7.SP.C. Investigate chance processes and develop, use, and evaluate probability models.

7.SP.C.5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

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7.SP.C.6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

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7.SP.C.7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

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7.SP.C.7a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.

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7.SP.C.7b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

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7.SP.C.8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

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7.SP.C.8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.

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7.SP.C.8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.

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CCSS: Mathematics: The Number System (CCSS: Grade 8)

8.NS.A. Know that there are numbers that are not rational, and approximate them by rational numbers.

8.NS.A.1. Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.

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